



# **SERVICE DATA**

## **HEDGE TRIMMER**

**ECHO :**  
**HC-2020 HC-2020R HC-2320**  
**shindaiwa :**  
**DH202**

**(serial number : 38000001 and after)**

### **INTRODUCTION**

We are constantly working on technical improvement of our products. For this reason, technical data, equipment and design are subject to change without notice. All specifications and directions in this SERVICE DATA are based on the latest product information available at the time of publication.

**Caburetor Adjustment video**

**CLICK HERE**



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Reference No. **12-21T-J1**

**REVISED : 202206**

ISSUED: 201911



## 1 SERVICE INFORMATION

## 1-1 Specifications

Models			HC-2020, DH202	HC-2320	HC-2020R
Dimensions	Length	mm(in)	1052 (41.4)	1157 (45.6)	1043 (41.1)
	Width	mm(in)	272 (10.7)		
	Height	mm(in)	198 (7.8)		
Dry weight		kg(lb)	4.5 (9.9)	4.6 (10.1)	
Engine	Type		YAMABIKO, air-cooled, two-stroke, single cylinder		
	Rotation		Counterclockwise as viewed from the output end		
	Displacement	cm <sup>3</sup> (in <sup>3</sup> )	21.2 (1.294)		
	Bore	mm(in)	32.2 (1.268)		
	Stroke	mm(in)	26.0 (1.024)		
	Compression ratio		5.6		
Carburetor	Type		Diaphragm, horizontal-draft, with purge bulb		
	Model		ZAMA RB-Z011/67A		
	Venturi size - Throttle bore	mm(in)	9 - 10.5 (0.354 - 0.413)		
Ignition	Type		CDI (Capacitor discharge ignition) system, Digital magneto		
	Spark plug		NGK BPMR8Y		
Exhaust	Muffler type		Spark arrester muffler with catalyst		
Starter	Type		Automatic rewind		
	Rope diameter x length	mm(in)	3.0 x 850 (0.12 x 33.5)		
Fuel*	Type**		Mixed two-stroke fuel		
	Mixture ratio		50 : 1 (2%)		
	Gasoline		Minimum 89 octane		
	Two-stroke air cooled engine oil		ISO-L-EGD (ISO/CD13738), JASO FC/FD		
	Tank capacity		Full tank capacity: 0.39 (13.2) Usable capacity: 0.36 (12.2)		
		L (U.S.fl.oz.)			
Clutch	Type		Centrifugal, 2-shoe slide		
Handle	Type	Front	Loop type with hand guard		
		Rear	Chain saw type with throttle and throttle lock-out		Rubber grip with throttle trigger (Rotatable handle)
Gear case	Reduction ratio		5.88		
	Gear tooth		Spur		
	Lubrication		Lithium based grease		
Cutter	Type		Double reciprocating, double sided		
	Effective length	mm(in)	534 (21.02)	639 (25.16)	534 (21.02)
	Pitch	mm(in)	35 (1.38)		
	Height	mm(in)	21 (0.83)		
	Thickness	mm(in)	2.5 (0.10)		
	Lubrication		Apply oil every 4 hours of use		

\* Refer to Operator's manual.

\*\* Premixed alkylate fuel for 2-stroke can be used.

## 1-2 Technical data

Engine			
Compression pressure	MPa (kgf/cm <sup>2</sup> ) (psi)		0.7 (7.1) (101)
Clutch engagement speed	r/min		5200
Ignition system			
Spark plug gap	mm(in)		0.6 - 0.7 (0.024 - 0.028)
Spark test			
Tester gap w/ spark plug	mm(in)		4.0 (0.16)
Tester gap w/o spark plug	mm(in)		6.0 (0.24)
Secondary coil resistance	kΩ		2.6 - 3.0
Pole shoe air gaps	mm(in)		0.3 - 0.4 (0.012 - 0.016)
Ignition timing	at 3,300 r/min	°BTDC	19
	at 8,000 r/min	°BTDC	32
Carburetor			
Test Pressure, minimum	MPa (kgf/cm <sup>2</sup> ) (psi)		0.05 (0.5) (7.0)
Metering lever height	mm(in)		0.1 - 0.25 (0.004 - 0.002) lower than diaphragm seat
Limiter cap / plug			Limiter plug P/N: P005-001270
Tool to adjust mixture needles			Screwdriver 2.5 mm P/N: X603-000050 (Carb. adjustment tool P/N: Y089-000094)
Carburetor adjustment			
1) Initial setting	H mixture needle	turn out	1 1/8
	L mixture needle	turn out	3 1/4
	Throttle adjust screw	turn out* <sup>1</sup>	7 5/8
Engine warm-up	Idle - WOT : Total	sec.	10 - 50 : 240
2) Find idle maximum speed			Adjust L mixture needle to maximum idle speed* <sup>2</sup>
3) Set idle maximum speed w/ TAS			4100
4) Set idle speed by turning L mixture needle CCW			3300
5) Find WOT maximum speed			Adjust H mixture needle to maximum WOT speed
6) WOT setting			Turn H mixture needle CCW to decrease WOT speed by : 130 - 190
7) Verify final engine speed with standard equipment			Idle: 2900 - 3700 WOT: 10000 - 11000
8) Verify clutch engagement speed			Confirm clutch engagement speed. If it is less than 1.25 times the idle speed, adjust the idle speed by turning TAS CCW.

**BTDC:** Before top dead center **WOT:** Wide open throttle **CCW:** Counterclockwise **TAS:** Throttle adjust screw

\*<sup>1</sup> Turn Throttle adjust screw (TAS) clockwise until its head touches boss. Then turn TAS counterclockwise.

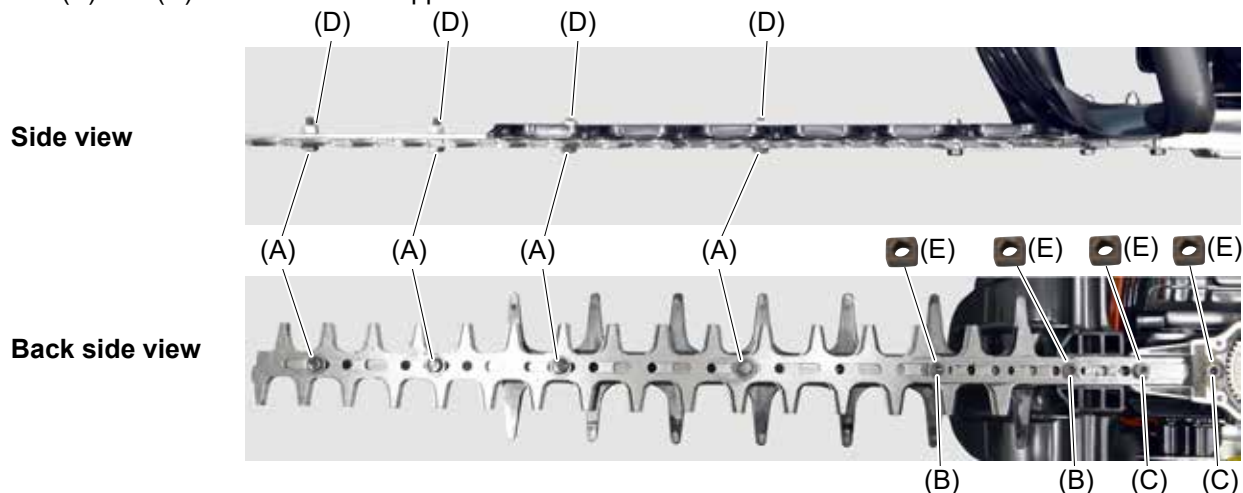
\*<sup>2</sup> If clutch engages during adjustment process 2), decrease engine speed by turning TAS ACW until clutch disengages and then redo 2).

## 1-3 Torque limits

Descriptions		Size	kgf•cm	N•m	in•lbf
Starter system	Starter pawl	M5	60 - 90	6 - 9	53 - 79
	Starter case	Crankcase side	M4*	25 - 35	22 - 30
		Cylinder cover side	M5†	20 - 30	18 - 26
Ignition system	Magneto rotor (Flywheel)	LM6*	80 - 100	8 - 10	70 - 88
	Ignition coil	M4	35 - 45	3.5 - 4.5	30 - 39
	Spark plug	M14	130 - 170	13 - 17	115 - 150
Fuel system	Carburetor	M5	30 - 45	3 - 4.5	26 - 39
	Intake insulator	M5*	50 - 70	5 - 7	44 - 61
	Fuel tank	M5*	40 - 60	4 - 6	35 - 53
Clutch	Clutch assembly	M8	160 - 200	16 - 20	140 - 175
Cylinder cover		M5	30 - 45	3 - 4.5	26 - 39
Engine	Crankcase / Cylinder	M5	70 - 110	7 - 11	61 - 95
	Muffler	M5*	70 - 90	7 - 9	61 - 79
	Engine mount on gear case	M6	80 - 120	8 - 12	70 - 105
Handle	Rear handle lid**	M4†	20 - 30	2 - 3	18 - 26
	Rear handle assembly	M5	40 - 50	4 - 5	35 - 44
	Front handle	M5	30 - 40	3 - 4	26 - 35
Regular bolt, nut, and screw		M3	6 - 10	0.6 - 1	5 - 9
		M4	15 - 25	1.5 - 2.5	13 - 22
		M5	25 - 45	2.5 - 4.5	22 - 39
		M6	45 - 75	4.5 - 7.5	39 - 65
		M8	110 - 150	11 - 15	95 - 130

Cutter	Cutter bolts (A)	M6	5 - 15	0.5 - 1.5	5 - 13
	Cutter nuts (D)	M6	50 - 70	5 - 7	44 - 61
	Cutter support (B)	M5	50 - 70	5 - 7	44 - 61
	Cutter support (C)	M5	90 - 110	9 - 11	79 - 91
	Gear case lid	M4*	30 - 45	3 - 4.5	26 - 39

**NOTE:** To assemble the cutter, fasten 4 pcs of cutter bolts (A) with 0.5 - 1.5 N•m, and back 1/2 turns (180°) counterclockwise. Then tighten 4pcs of nuts (D) with 5 - 7 N•m, holding cutter bolts (A) with spanner. Fasten other cutter bolts (B) with 5 - 7 N•m and bolts (C) with 9 - 11 N•m, because spacers (E) are installed on the bolts (B) and (C) between cutter support.

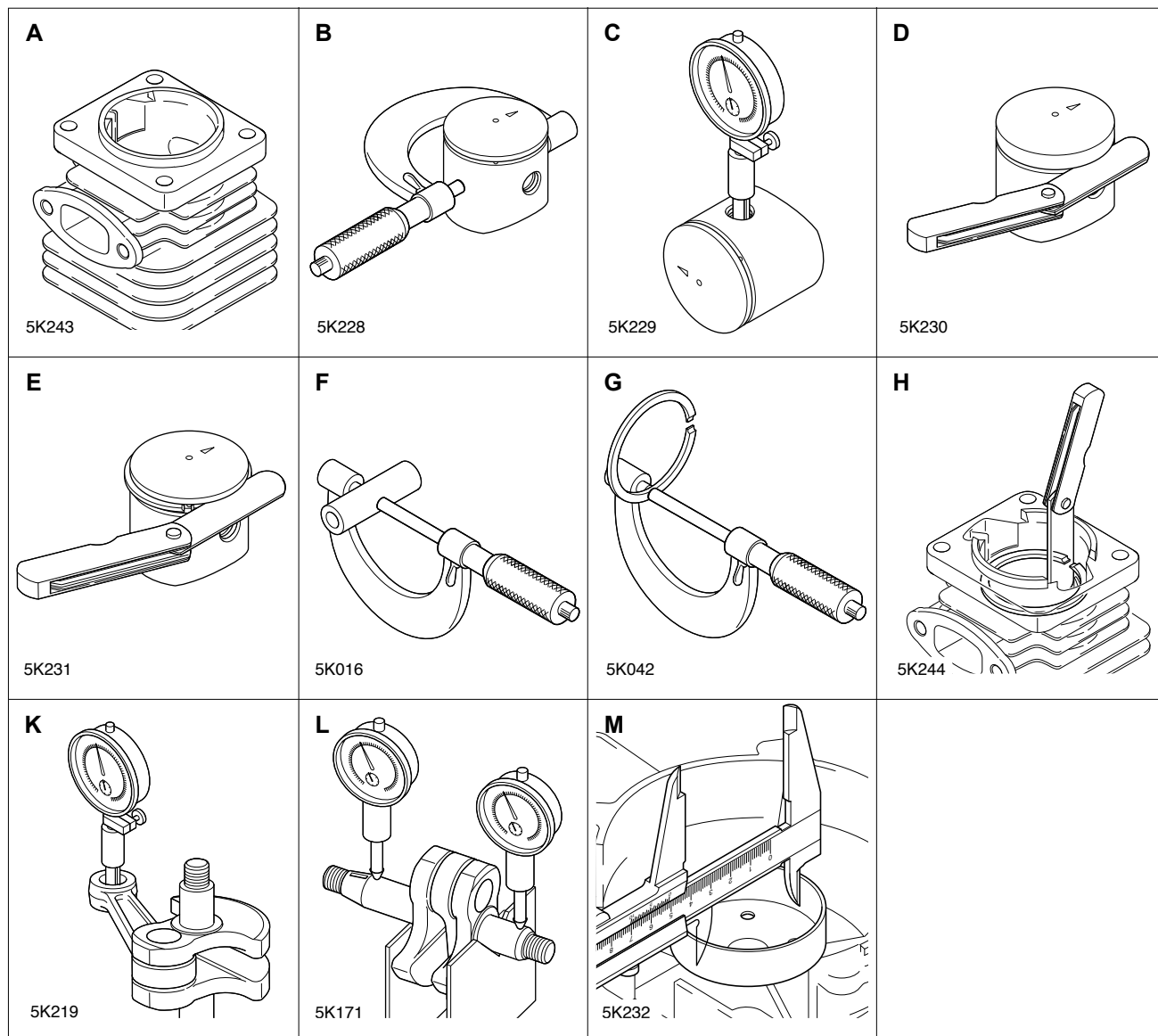


**LM:** Left hand thread \* Apply thread locking sealant (See next page). † Tapping screw \*\* HC-2020R only

**1-4 Special repairing materials**

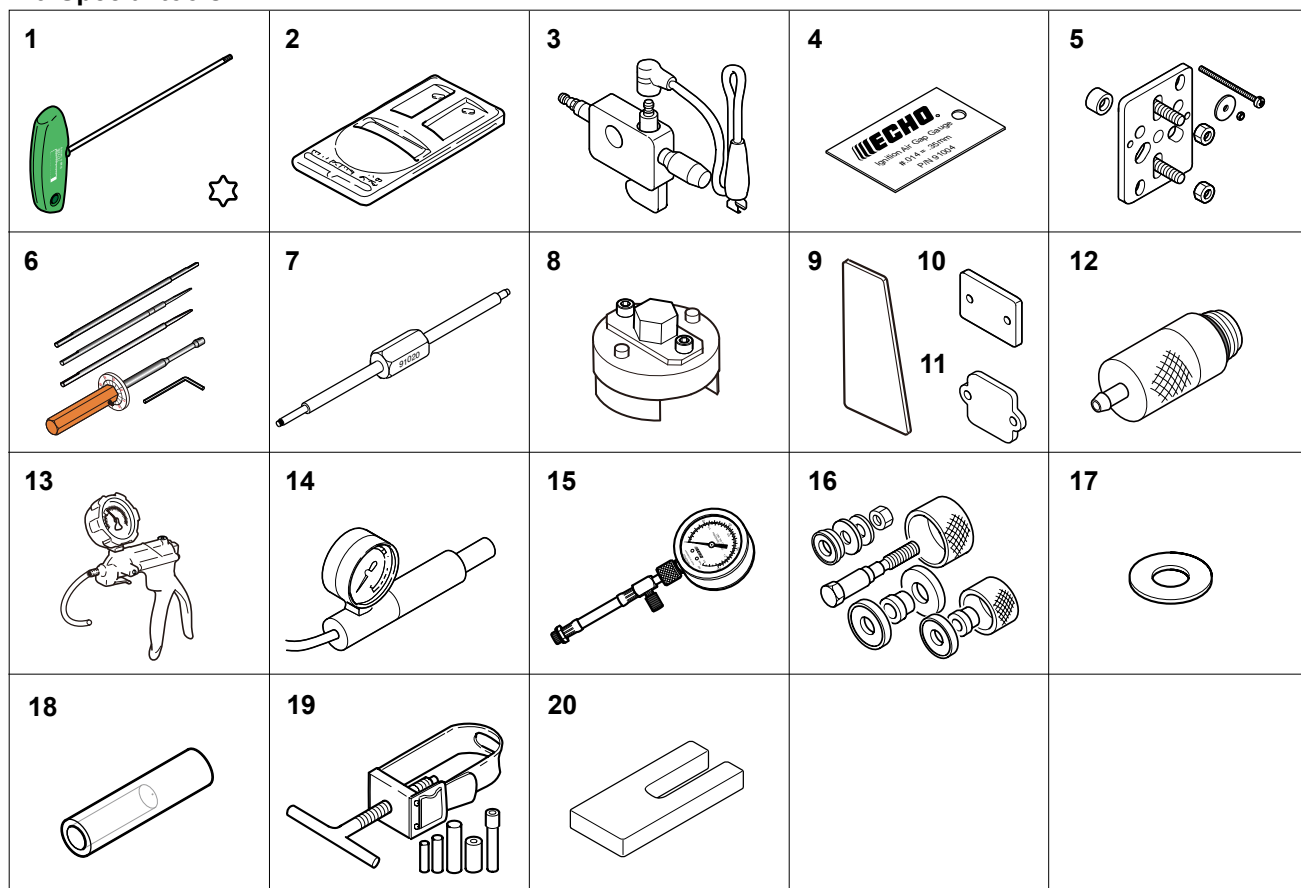
Material	Location	Remarks
Grease	Gear case	EPNOC AP2 (Lithium based grease) P/N X695-000060
	Rewind spring	
	Starter center post	
	Oil seal inner lips	
Thread locking sealant	Magneto rotor (Flywheel)	ThreeBond #1344J or equivalent
	Intake insulator	ThreeBond #1324N or equivalent
	Gear case lid	
	Fuel tank	
	Starter case (Crankcase side)	
	Muffler	ThreeBond #1327 or equivalent

## 1-5 Service limits



Description			mm (in)
A	Cylinder bore		When plating is worn and aluminum can be seen
B	Piston outer diameter	Min.	32.10 (1.264)
C	Piston pin bore	Max.	8.030 (0.3161)
D	Piston ring groove	Max.	1.6 (0.063)
E	Piston ring side clearance	Max.	0.1 (0.004)
F	Piston pin outer diameter	Min.	7.97 (0.3138)
G	Piston ring width	Min.	1.45 (0.057)
H	Piston ring end gap	Max.	0.5 (0.02)
K	Con-rod small end bore	Max.	12.025 (0.4734)
L	Crankshaft runout	Max.	0.02 (0.001)
M	Clutch drum bore	Max.	51.5 (2.03)

1-6 Special tools



Key	Part Number	Description	Reference
1	X602-000340	Torx wrench (T27)	Removing and installing torx bolts
2	897802-33330	Tachometer PET-1000R	Measuring engine speed to adjust carburetor
3	897800-79931	Spark tester	Checking ignition system
4	91004	Module air gap gauge	Adjusting pole shoe air gaps
5	Y089-000111	Puller	Removing magneto rotor (flywheel) and crankcase
6	Y089-000095	Carburetor adjustment tool	Adjusting carburetor
7	91020	Limiter plug tool	Removing and installing limiter plugs
8	X600-000130	Clutch spanner	Removing and installing clutch assembly
9	91041	Pressure rubber plug	Plugging exhaust port to test crankcase/cylinder leakages
10	897826-16131	Pressure rubber plug	Plugging intake port to test crankcase/cylinder leakages
11	897827-16131	Pressure plate	Plugging intake port to test crankcase/cylinder leakages
12	A131-000150	Pressure connector	Testing crankcase and cylinder leakage
13	91149	Pressure / vacuum tester	Testing crankcase / cylinder leakages
14	897803-30133	Pressure tester	Testing carburetor and crankcase leakage
15	91037	Compression gauge	Measuring cylinder compression
16	897701-14732	Bearing tool	Removing and installing ball bearings on crankcase
17	363018-00310	Washer	Installing crankcase oil seal
18	897726-21430	Oil seal tool	Installing oil seal
19	897702-30131	Piston pin tool	Removing and installing piston pin
20	897719-02830	Piston holder	Making piston steady to remove and install piston/ring